

## Apparatus for Emptying a Hose Bag

The invention concerns a device for emptying a hose bag.

From the state of the art are known self-opening hose bag packs, which are fixedly attached to the front side of a bottom part, wherein by exerting pressure on the film bag the blades press into the hose bag and in this way open the same.

In particular in German patent publication 29,705,488 is disclosed an apparatus for emptying a hose bag comprising a cap-like mating part that can be fixed on one end of the hose bag, which has a cavity ending in an outlet opening and a device arranged therein for opening the hose bag film, wherein the apparatus is characterized in that the hose bag is adhesively attached to a transverse surface which supports it on the front side. The device used for the opening is a fixed spike.

European patent publication 0,922,645 discloses an applicator for thinly liquid media having a cutting element whose underside is configured beveled and which is provided with a cutting edge for breaking through a membrane.

A disadvantage of these embodiments is the fact that the bag must be separated very accurately to ensure the correct functioning of the emptying of the hose bag. A particularly disadvantageous effect is caused by the need of providing a thick bonding and seal of the hose bag and the mating part, which involves relatively high production costs.

From what was mentioned above results the object of providing a new apparatus with whose aid the above-mentioned disadvantages can be prevented at least in part, in particular an apparatus that is capable of producing a sufficiently large and reproducible opening even in hose bag film materials with low elasticity or a high tear propagation

resistance without causing part of the film to become separated and removed together with the content of the hose bag.

These problems are solved in accordance with the invention via an apparatus according to claim 1.

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The apparatus for emptying a hose bag in accordance with the invention includes a cap-like mating part that can be fixed on one of the ends of the hose bag, which has a pipe-like outlet opening and a device for opening a hose bag arranged therein. The device is a helical cutting blade, that is, this blade can cut into the hose bag film material almost like an Archimedean screw.

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The curved embodiment of the blade ensures that an S-shaped cut is produced when cutting, which even in films with insufficient elasticity or very high tear propagation resistance produces a very large and reproducible opening without causing part of the film to become separated and removed together with the content of the hose bag.

Initially, it is advantageous if the blade is rotatably displaced by means of an insertable nozzle into the outlet opening and in the hose bag direction, since in this way an adaptation to any hose bag film material is possible to that effect, so that an optimum cutting position of the blade is provided. It is also advantageous if the blade can be locked in a position which opens the hose bag, since in this way an involuntary retracting of the blade and an eventual closing of the hose bag connected therewith is prevented and a safe emptying is ensured in this way.

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Finally, it is advantageous if the nozzle seals against the inner wall of the pipe-shaped outlet opening so that, in this way, an uncontrolled escaping of the hose bag content between the pipe-shaped outlet opening and the nozzle is prevented.

The following examples serve to explain the invention.

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In the figures,

- 5      Figure 1      shows a schematic illustration in cross section of an apparatus in accordance with the invention with an unopened hose bag;
- Figure 2      shows a schematic illustration of the apparatus shown in Figure 1 with an opened hose bag;
- 10      Figure 3      shows a schematic view of an open blade cutting a hose bag;
- Figure 4      shows a schematic three-dimensional illustration of the blade shown in Figure 3;
- Figure 5      shows a schematic view of another embodiment of a blade;
- Figure 6      shows a schematic three-dimensional illustration of the blade shown in Figure 5.

Figure 1 shows an apparatus in accordance with the invention for emptying a hose bag 1, wherein the bag is shut by an upper and lower bag clip 6, 7, and the lower bag clip 7 is arranged in a corresponding cavity 8 of a cap-like mating part 2. The hose bag 1 with the cap-like mating part 2 is fixed by means of an adhesive merely via the inner side walls 9 of the mating part.

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The cap-like mating part 2 has a pipe-shaped outlet opening 2, in which a double-edged blade 4 with an adjacent helix-shaped cutting blade curve is arranged by means of a removable transport safety 10. The blade is rotatably mounted in the pipe-shaped outlet opening 3 by means of an insertable nozzle 5.

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To cut through the hose bag 1 so as to empty each one of the hose bag contents, the transport safety 10 is removed, and the nozzle 5 is then inserted up to the stop in the direction of the hose bag 1, so that the blade 4 cuts open the hose bag 1 at the corresponding location (see Figure 2).

The contents of the hose bag 1 can now be emptied by means of a pressure impingement via the corresponding cut opening and then, in accordance with the invention, via the pipe-shaped outlet opening 3 and the hollow-shaped nozzle 5.

The nozzle 5 seals against the inner wall of the pipe-shaped outlet opening 3, so that the corresponding hose bag contents cannot pass in an uncontrolled manner between the nozzle 5 and the outlet opening 3.

In Figures 3 to 6 are shown two different embodiments of a blade arranged in the apparatus for emptying a hose bag in accordance with the invention, wherein the blade is shaped in the cutting area almost like an Archimedean screw as shown, so that the cutting surface has a helix-shaped curve up to the vertex, that is, almost up to the tip of the blade.

In the rear area, the blade has several material projections, which serve to lock and fix the blade in the apparatus according to the invention, so that the blade is not pushed back unexpectedly when a hose bag is installed.

Via the especially curved embodiment of the blade is produced an S-shaped cut when cutting into a hose bag, which even in films with insufficient elasticity or very high tear propagation resistance produces a sufficiently large and reproducible opening without causing parts of the film to become separated and removed together with the content of the hose bag.